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# foreign agriculture circular

U.S. DEPT. OF AGRICULTURE

SEP 16 1975

## livestock and meat

FLM 7-75  
August 1975

### CONSUMPTION OF PORK AND POULTRY PRODUCTS OUTPACED FORAGE-BASED PRODUCTS, 1961-73, IN FRANCE, ITALY, WEST GERMANY, UNITED KINGDOM, AND JAPAN

Per capita consumption patterns of livestock-protein products shifted in France, Italy, West Germany, the United Kingdom, and Japan during the period 1961-1973. Total consumption increased markedly in Japan—still a comparatively small consumer—and in Italy. Substantial increases occurred in France and West Germany, but this upward trend turned downward in the early 1970's. Per capita consumption in the United Kingdom drifted downward throughout the period covered.

There were varying trends among the five countries with respect to the individual items comprising total livestock-protein consumption. However, a distinct trend that encompassed them all was a more pronounced increase in per capita consumption of products derived mainly from concentrate feeds (pork and poultry products) as contrasted with forage-based items (dairy products, beef, and mutton).

The distinction between the two categories of livestock products is consequential, because in the countries studied cattle and sheep production—more highly dependent on roughages in these countries than in the United States, involves less diversion of harvested crops from human consumption. Little grazing would be deliberately wasted. Supplementary feeding of concentrates is used to vary production, while some feeding of hay and silage (cultivated crops) is widely needed during the winter.

Some efforts are made to improve grazing conditions, but progress over wide areas tends to be slow. Variations in weather conditions over a fixed grazing area generally govern total grass consumption by ruminants, tending to set the upper and lower limits of the herds that can be supported and fixing the constraints for production decisions by governments and producers.

Forage-based livestock output, particularly meats, is thus restricted in its ability to respond to changing demand. Concentrate-based output is much less constrained by the different characteristics of the producing industries.

It is able to expand quickly to fill demand that beef and mutton are unable to satisfy. Conversely, in the face of a prolonged slump in demand and the relative inflexibility of beef and mutton supplies, pork and poultry production are potentially more vulnerable to downward pressures in the absence of offsetting policy measures.

In the four West European countries studied, consumption of fluid milk, cheese, butter, and other dairy items accounted for the preponderance of total livestock-protein product consumption. Consumption of dairy products in 1973 ranged from a total of 107 pounds per capita in Italy to 207 pounds in the United Kingdom.

Dairy products accounted for 45 percent of total livestock-protein consumption in Italy and from 50 to 57 percent in the other three countries. Japanese consumption of dairy products was much smaller quantitatively, but still comprised a substantial portion of total livestock proteins. However, eggs appear to be of roughly equal importance.

Total consumption of dairy products in Italy expanded steadily during 1961-73, but declined slightly in the United Kingdom and West Germany. In France, consumption increased through 1968-69 and trended downward thereafter. Fluid milk weighed heavily in total dairy product consumption. Trends in total livestock-protein consumption are greatly influenced by total dairy product consumption.

Except for the United Kingdom, which had the highest consumption in the base period, egg consumption trended steadily upward, with the greatest increase in Japan. The quantities of eggs consumed per capita exceeded poultry meat consumption during 1961-65 in all five countries. This relationship still existed in 1973 in West Germany, the United Kingdom, and Japan.

Total meat consumption expanded only slightly during the study period in the United Kingdom, where consumption was the highest during 1961-65 (120 pounds per capita). In countries where meat consumption was initially

the lowest, it increased the most—by 108 percent in Italy and 208 percent in Japan, although Japanese consumption totaled only 47 pounds per capita by 1973. Substantial and steady gains occurred in France and West Germany. However, as shown in Table 3, the various kinds of meat did not share equally in these increases.

Throughout the study period, pork consumption increased steadily and accounted for the largest segment of total meat consumption in all countries except Italy.

Beef and veal consumption in Italy, West Germany, and Japan increased. It varied within a narrow range in France, and declined in the United Kingdom. As a percent of total per capita meat consumption, however, beef and veal consumption declined in all five countries.

Mutton and lamb consumption is substantial only in the United Kingdom, where it trended downward. Japanese consumption of mutton and lamb increased.

Poultry meat consumption—mainly broilers—registered steady expansion in all five countries. Although poultry meat is not the largest meat item in any of the five countries, poultry meat consumption increased at a much sharper rate than any other meat. Between the early 1960's and 1973, increases in per capita poultry meat consumption ranged from 77 percent in West Germany to 367 percent in Japan.

The general trends in per capita meat consumption during the study period are reflected in Table 4, which shows that the two concentrate-based meats (pork and poultry meat) registered gains that tended to be uniformly much larger than the forage-based meats (beef and mutton).

With respect to total consumption of all livestock-protein products, concentrate-based items provided an increasing percentage in all five countries throughout the study period. In 1973, this proportion ranged from 30 percent in the United Kingdom to 40 percent in West Germany.

Forage-based products dominated consumption patterns in Western Europe, reflecting the existence of a massive dairy industry. This industry is the source not only of the milk products consumed, but also most of the beef and veal. Imported beef and mutton are also mostly forage-based in the countries of origin. In either case, supplies are heavily influenced by the rigidities in the grazing base. Similarly, mutton and lamb are also dependent on grazing, and to a great extent are byproducts of another industry—wool.

De-emphasis of milk production in favor of beef production as well as decisions regarding levels of imports and exports could affect supply levels. However, fluctuations in total supplies of forage-based products are substantially constrained by the quantities of grazing that become available. With Western Europe's dairy industry favored by climate and topography as well as official policy, the greatest scope for production decisions lies in areas outside milk production. Therefore, the response of livestock-protein supply to rising incomes and demand can be better seen after excluding dairy product data from total

consumption, as presented in Table 5. This reduces the comparison to beef and mutton on one hand, and total consumption of pork, poultry meat, and eggs on the other.

Excluding dairy products, the largest absolute increases in consumption of forage-based products occurred in countries where it was low initially—Italy and Japan. Consumption of these items declined substantially in the United Kingdom and changed rather little in France and West Germany. In sharp contrast, consumption of concentrate-based items increased markedly in all five countries.

The much greater increases in production and consumption of pork, poultry meat, and eggs as compared with forage-based meats might be viewed as reflecting shifts in consumer preference, as well as favorable price relationships. However, there is another interpretation that can be given—that the concentrate-based industries have much greater structural flexibility. Pork and poultry products are not byproducts except for small amounts of fowl meat. These industries occupy very little land. Swine and poultry reproduce prolifically and have short production cycles. Thus, production levels can fluctuate greatly and relatively quickly as the result of decisions made with a view only to feed supplies and price relationships.

The modest supply response of beef and mutton to greatly expanding demand for livestock-protein during 1961–73 suggests that the remainder of the demand could only be filled by concentrate-based products. To illustrate: If the total increase in meat consumption between 1961–65 and 1973 were to have been filled by beef and veal, it would have required a 55 percent increase in France's beef and veal supplies, a 245 percent increase in Italy, 83 percent in West Germany, and about 900 percent in Japan. It is unlikely that the structure of the cattle industries in Western Europe and in the beef-exporting countries could have permitted supplies to increase sufficiently to approach filling such demand unless large additional amounts of grain and protein meal were devoted to the cattle industries—that is, unless the structure of these industries were to be significantly altered.

Given an extended slump in meat demand and the existing structure of beef production in Western Europe and Japan, beef and veal output could contract over time through slaughter at lighter weights and reduction in herd numbers but, in the present context, only within limits if usual dairy operations were to be continued and deliberate waste of pasturage avoided.

As beef production, which is comparatively inflexible, came to supply a larger portion of a smaller demand for meat, beef supplies overhanging the market might adversely affect prospects for pork and poultry consumption. Changes in import, pricing, and storage policies—such as now operate in some areas—could maintain some stability in consumption patterns. However, in the absence of such policies, concentrate-based items could become vulnerable to a disproportionately sharp decrease in demand.



### Comment on Statistics

Measurements are presented in estimated product weight at the retail level because this measurement most closely reflects taste preferences as well as the economic capacity to satisfy the preferences. A degree of noncomparability in some measurements is thus injected into the study. To illustrate: Combined bone and water content of meat varies significantly—from a low of about 62 percent of the carcass weight equivalent of beef to a high of about 80 percent in the case of poultry meat. Also, the moisture content of cheese can range from around 10 to more than 70 percent. However, this analysis focuses on effective demand and related economic considerations, while assuming that in the face of rising affluence nutritional value and similar concerns were much less impelling factors. For the purpose, measurements in product weight appeared more practical than any alternative.

Per capita consumption of red meats in carcass

weight equivalents were converted to estimated product weight at the retail level using conversion factors that attempt to allow for, among other things, the physical characteristics of European animals as well as European meat retailing practices. Both differ from those in United States. The factors applied were 63 percent for estimated consumption in carcass weight equivalent of beef and veal, 87 percent for mutton and lamb, and 80 percent for pork. However, these factors are subject to refinement when data based on objective studies becomes available. Representing a beverage, data on fluid milk is apparently noncomparable to other items analyzed. Therefore a conversion factor (0.53) was applied to reduce the nonnutritive content into the general range of that of the meat items. Egg numbers were converted to pounds, assuming in all instances an average weight of 2 ounces per egg.

Table 1 Consumption of livestock-protein products, forage-based and concentrate-based by class of product, with comparisons, averages 1961-65, 1968 and yearly 1969-1973, in pounds per capita product weight (retail level) <sup>1/</sup>

	Average :1961-65	Average : 1966-68	: 1969	: 1970	: 1971	: 1972	: 1973
<u>France</u>							
Forage-based							
Dairy products .....	168	173	190	186	157	161	156
Beef and veal .....	40	42	41	41	40	39	39
Mutton and lamb .....	4	5	5	6	6	6	6
Sub-total .....	212	220	236	233	203	206	201
Concentrate-based							
Pork .....	44	49	49	50	52	54	53
Poultry meat .....	18	24	27	25	26	28	30
Eggs .....	2/24	26	28	28	29	29	28
Sub-total .....	86	99	104	103	107	111	111
Total .....	298	319	340	336	310	317	312
<u>Italy</u>							
Forage-based							
Dairy products .....	96	105	103	102	105	107	107
Beef and veal .....	22	26	28	28	29	28	39
Mutton and lamb .....	2	2	2	2	2	2	2
Sub-total .....	120	133	133	132	136	137	148
Concentrate-based							
Pork .....	14	18	18	18	21	22	28
Poultry meat .....	12	25	26	27	30	34	35
Eggs .....	2/24	25	25	27	25	25	27
Sub-total .....	50	68	69	72	76	81	90
Total .....	170	201	202	204	212	218	238
<u>West Germany</u>							
Forage-based							
Dairy products .....	173	168	166	172	171	166	164
Beef and veal .....	30	32	33	35	35	33	32
Mutton and lamb .....	1	1	1	1	1	1	1
Sub-total .....	204	201	200	208	207	200	197
Concentrate-based							
Pork .....	57	62	64	67	72	74	70
Poultry meat .....	13	16	17	18	20	20	23
Eggs .....	2/29	32	34	36	36	37	36
Sub-total .....	99	110	115	121	128	131	129
Total .....	303	311	315	329	335	331	326
<u>United Kingdom</u>							
Forage-based							
Dairy products .....	215	213	210	211	208	205	207
Beef and veal .....	36	34	34	35	34	33	32
Mutton and lamb .....	22	21	19	19	20	18	16
Sub-total .....	273	268	263	265	262	256	255
Concentrate-based							
Pork .....	47	48	50	49	53	51	49
Poultry meat .....	15	20	23	23	24	25	27
Eggs .....	2/36	36	36	33	34	33	31
Sub-total .....	98	104	109	105	111	109	107
Total .....	371	372	372	370	373	365	362
<u>Japan</u>							
Forage-based							
Dairy products .....	22	31	36	37	37	2/	2/
Beef and veal .....	3	3	3	4	4	5	6
Mutton and lamb .....	1	2	3	3	4	4	4
Sub-total .....	26	36	42	44	45	2/	2/
Concentrate-based							
Pork .....	6	10	10	11	13	14	16
Poultry meat .....	3	6	9	11	12	14	14
Eggs .....	2/20	28	35	38	39	38	40
Sub-total .....	29	44	54	60	64	66	70
Total .....	55	80	96	104	109	2/	2/

<sup>1/</sup> See comments on data. <sup>2/</sup> Estimate based on OECD data. <sup>3/</sup> Not available.

Table 2

Consumption of dairy products: total by specified product, five selected countries, averages 1962-63/1964-65, 1965-66/1967-68 and yearly 1968-69 to 1972-73, in pounds per capita

	Average 1962-63/ 1964-65	Average 1965-66/ 1967-68	1968-69	1969-70	1970-71	1/ 1971-72	1/ 1972-73
<b>France</b>							
Fluid milk							
Whole.....	212.7	208.1	216.5	214.3	157.2	201.7	191.3
Skim.....	17.0	24.9	35.7	30.2	32.2	32.2	32.2
Cream.....	1.5	1.8	2.0	2.0	2.0	1.8	2.2
Sub-total, unadjusted.....	(231.2)	(234.8)	(254.2)	(246.5)	(191.4)	(203.5)	(193.5)
adjusted 2/.....	122.5	122.4	134.7	130.6	101.4	107.9	102.6
Condensed, whole & skim.....	3.7	3.7	4.2	4.0	4.0	3.5	3.7
Powder, whole & non-fat.....	2.6	3.5	3.5	2.4	4.4	4.4	3.3
Cheese.....	24.0	27.1	29.8	30.4	31.1	32.0	32.8
Butter 3/.....	15.0	16.3	17.9	18.1	16.1	13.0	13.7
Total, adjusted 2/.....	167.8	173.0	190.1	185.5	157.0	160.8	156.1
<b>Italy</b>							
Fluid milk							
Whole.....	139.4	148.9	145.8	143.8	146.9	145.5	145.5
Skim.....	4/	4/	4/	4/	4/	4/	4/
Cream.....	4/	4/	4/	4/	4/	4/	4/
Sub-total, unadjusted.....	(139.4)	(148.9)	(145.8)	(143.8)	(146.9)	(145.5)	(145.5)
adjusted 2/.....	73.9	78.9	77.3	76.2	77.9	77.1	77.1
Condensed, whole & skim.....	.9	.7	.4	.7	.7	.7	.7
Powder, whole and non-fat.....	1.3	.9	.7	.7	.7	.7	.7
Cheese.....	16.8	20.7	20.9	20.5	22.3	24.7	25.1
Butter 3/.....	3.3	3.3	3.5	3.5	3.5	3.5	3.5
Total, adjusted 2/.....	96.2	104.5	102.8	101.6	105.1	106.7	107.1
<b>West Germany</b>							
Fluid milk							
Whole.....	177.6	166.1	164.2	171.7	170.6	194.2	190.3
Skim.....	41.9	40.1	36.6	36.2	33.7	33.7	33.7
Cream.....	5.4	6.3	7.0	7.5	7.7	8.2	8.2
Sub-total, unadjusted.....	(224.9)	(212.5)	(207.9)	(215.4)	(212.1)	(202.4)	(198.5)
adjusted 2/.....	119.2	112.6	110.2	114.2	112.4	107.3	105.2
Condensed, whole & skim.....	17.7	18.1	17.0	17.4	17.0	16.8	16.1
Powder, whole & non-fat.....	2.8	3.3	3.8	3.8	4.4	5.3	4.9
Cheese.....	17.2	18.6	19.6	20.5	21.6	23.1	24.5
Butter 3/.....	15.9	15.7	15.4	16.1	15.4	13.0	13.7
Total, adjusted 2/.....	172.8	168.3	166.0	172.0	170.8	165.5	164.4
<b>United Kingdom 1/</b>							
Fluid milk							
Whole.....	325.3	318.7	312.1	311.1	306.5	306.5	310.1
Skim.....	4/	4/	4/	4/	4/	4/	4/
Cream.....	2.1	2.6	3.0	3.2	3.3	3.3	3.5
Sub-total, unadjusted.....	(327.4)	(321.3)	(315.1)	(314.3)	(309.8)	(309.8)	(313.6)
adjusted 2/.....	173.5	170.3	167.0	166.6	164.2	164.2	166.2
Condensed, whole & skim.....	7.4	8.1	8.5	8.6	8.8	7.9	7.8
Powder, whole & non-fat.....	4.4	4.1	3.9	4.5	4.5	5.0	3.8
Cheese.....	10.3	10.7	11.3	11.8	12.5	12.0	12.7
Butter 3/.....	19.4	20.0	19.6	19.4	18.0	15.9	16.7
Total, adjusted 2/.....	215.0	213.2	210.3	210.9	208.0	205.0	207.2
<b>Japan</b>							
Fluid milk							
Whole.....	31.8	49.6	56.2	58.4	58.2	5/	5/
Skim.....	5/	5/	5/	5/	5/	5/	5/
Cream.....	5/	5/	5/	5/	5/	5/	5/
Sub-total, unadjusted.....	(31.8)	(49.6)	(56.2)	(58.4)	(58.2)	5/	5/
adjusted 2/.....	16.9	26.3	29.8	31.0	30.8	5/	5/
Condensed, whole & skim.....	1.8	1.3	1.5	1.8	1.5	5/	5/
Powdered, whole & non-fat.....	1.1	1.8	1.8	2.0	2.0	5/	5/
Cheese.....	2.2	1.1	1.5	1.5	1.5	5/	5/
Butter.....	.4	.7	.9	.9	1.1	5/	5/
Total, adjusted 2/.....	22.4	31.2	35.5	37.2	36.9	5/	5/

Sources: Except U.K. and Japan, *Agricultural Statistics (Agrarstatistik)*; EC, various issues through 1970-71. For 1972, 1973; *Yearbook of Agricultural Statistics 1974*, EC. For U.K., *Dairy Facts and Figures*, Federation of U.K. Milk Marketing Boards, U.K.; various issues. For Japan, *Food Consumption Statistics, 1955-1971*, OECD, 1973.

1/ Calendar years corresponding to second of years indicated.

2/ Fluid milk multiplied by factor of 0.53, to compensate for high water content, reducing it into the range of non-nutritive content of other livestock products included in study.

3/ Fat content.

4/ Not available separately; included in whole milk.

5/ Not available. Five year averages for Japan are for 1960-64 and 1965-69, calendar years thereafter.

Table 3 Meat consumption, total by class of meat<sup>1/</sup>; five selected countries, averages 1961-65, 1966-68 and yearly 1969-1973, in pounds per capita in product weight (retail level) <sup>2/</sup>

	Average :1961-65	Average :1966-68	: 1969	: 1970	: 1971	: 1972	: 1973
<u>France</u>							
Pounds							
Beef and veal .....	40	42	41	41	40	39	39
Mutton and lamb .....	4	5	5	6	6	6	6
Pork .....	44	49	49	50	52	54	53
Poultry meat .....	18	24	27	25	26	28	30
Total .....	106	120	122	122	124	127	128
Percent of total							
Beef and veal .....	38	35	34	34	32	31	30
Mutton and lamb .....	4	4	4	5	5	5	5
Pork .....	41	41	40	41	42	42	41
Poultry meat .....	17	20	22	20	21	22	24
<u>Italy</u>							
Pounds							
Beef and veal .....	22	26	28	28	29	28	39
Mutton and lamb .....	2	2	2	2	2	2	2
Pork .....	14	18	18	18	21	22	28
Poultry meat .....	12	25	26	27	30	34	35
Total .....	50	71	74	75	82	86	104
Percent of total							
Beef and veal .....	44	37	38	37	35	33	38
Mutton and lamb .....	4	3	3	3	2	2	2
Pork .....	28	25	24	24	26	26	27
Poultry meat .....	24	35	35	36	37	39	33
<u>West Germany</u>							
Pounds							
Beef and veal .....	30	32	33	35	35	33	32
Mutton and lamb .....	1	1	1	1	1	1	1
Pork .....	57	62	64	67	72	74	70
Poultry meat .....	13	16	17	18	20	20	23
Total .....	101	111	115	121	128	128	126
Percent of total							
Beef and veal .....	30	29	29	29	27	26	25
Mutton and lamb .....	1	1	1	1	1	1	1
Pork .....	56	56	55	55	56	57	56
Poultry meat .....	13	14	15	15	16	16	18
<u>United Kingdom</u>							
Pounds							
Beef and veal .....	36	34	34	35	34	33	32
Mutton and lamb .....	22	21	19	19	20	18	16
Pork .....	47	48	50	49	53	51	49
Poultry meat .....	15	20	23	23	24	25	27
Total .....	120	123	126	126	131	127	124
Percent of total							
Beef and veal .....	30	28	27	28	26	26	26
Mutton and lamb .....	18	17	15	15	15	14	13
Pork .....	39	39	40	39	41	40	39
Poultry meat .....	13	16	18	18	18	20	22
<u>Japan</u>							
Pounds							
Beef and veal .....	3	3	3	4	4	5	6
Mutton and lamb .....	1	2	3	3	4	4	4
Pork .....	6	10	10	11	13	14	16
Poultry meat .....	3	6	9	11	12	14	14
Total .....	13	21	25	29	33	37	40
Percent of total							
Beef and veal .....	23	14	12	14	12	14	15
Mutton and lamb .....	8	10	12	10	12	11	10
Pork .....	46	47	40	38	40	37	40
Poultry meat .....	23	29	36	38	36	38	35

1/ Excludes variety meats. 2/ To estimate product weight at retail level the factors of .63, .87 and .80 were applied to the carcass weight equivalent of, respectively, beef and veal, mutton and lamb, and pork. Poultry meat data is presented on ready-to-cook base; i.e., carcass weight equivalent, including giblets, with no adjustment.



Table 4 Changes in meat consumption, 1961-65 average to 1973,  
five selected countries, in pounds per capita  
product weight (retail level)

	:Beef : and :veal	: Mutton : and : lamb	: Pork	: Poultry : meat	: Total
France .....	-1	+2	+9	+12	+22
Italy .....	+17	0	+14	+23	+54
West Germany .....	+2	0	+13	+10	+25
United Kingdom .....	-4	-6	+2	+12	+4
Japan .....	+3	+3	+10	+11	+22
	:	:	:	:	:

NOTE: This table reflects the general relationship between consumption in 1961-65 and 1973. However, in Table 1 note that consumption of certain items in certain countries declined from 1974 to 1973.

Table 5 Change in consumption of forage-based items (excluding  
dairy products) and concentrate-based items,  
1961-65 average to 1973, five selected  
countries, in pounds per capita  
(retail level)

	:Forage- :based :items <u>1/</u>	: Concentrate : -based : items <u>2/</u>
France .....	+1	+25
Italy .....	+17	+40
West Germany .....	+2	+30
United Kingdom .....	-10	+9
Japan .....	+6	+41
	:	:

NOTE: This table reflects the general relationship between consumption in 1961-65 and 1973. However, in Table 1 note that consumption of certain items in certain countries declined from 1974 to 1973.

1/ Excludes dairy products, includes beef, veal, mutton and lamb. 2/ Includes pork, poultry meat and eggs.

See text.

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